MAX-M8 series

u-blox M8 concurrent GNSS modules

Highlights

- u-blox's smallest LCC package
- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Industry leading –167 dBm navigation sensitivity
- u-blox AssistNow GNSS Online, Offline and Autonomous
- Product variants to meet performance and cost requirements
- Pin-to-pin and software compatible with MAX-7 and MAX-6

MAX-M8 series:
9.7 x 10.1 x 2.5 mm

Product description

The MAX-M8 series of standalone concurrent GNSS modules is built on the exceptional performance of the u-blox M8 engine in the industry proven MAX form factor. With dual-frequency RF front-end, the u-blox M8 concurrent GNSS engine is able to intelligently use the highest amount of visible satellites from two GNSS (GPS, GLONASS and BeiDOU) systems for more reliable positioning. The MAX-M8 series is ideal for performance driven applications.

The MAX-M8 series provides high sensitivity and minimal acquisition times while maintaining low system power. The MAX-M8C is optimized for cost sensitive applications and has the lowest power consumption, the MAX-M8Q provides best performance for passive and active antennas designs, while the MAX-M8W is optimized for active antennas with best performance. The industry-proven MAX form factor allows easy migration from previous MAX generations. Sophisticated RF-architecture and interference suppression ensure maximum performance even in GNSS-hostile environments.

The MAX-M8 combines a high level of integration capability with flexible connectivity options in a miniature package. This makes MAX-M8 perfectly suited for industrial applications with strict size and cost requirements. The MAX-M8Q is also halogen free (green) which makes it also a perfect solution for consumer applications. The DDC (I²C compliant) interface provides connectivity and enables synergies with the most of u-blox SARA, LEON and LISA wireless modules.

u-blox M8 modules use GNSS chips qualified according to AEC-Q100, are manufactured in ISO/TS 16949 certified sites, and fully tested on a system level. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

Product selector

Model	Type							Supply			Interfaces				Features										
	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	2.7 V – 3.6 V	1.65 V – 3.6 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logging	Noise figure	Outband Robustness	RTC crystal	Internal oscillator	Antenna supply	Antenna short circuit detection / protection	Antenna open circuit detection pin	Timepulse output	External interrupt / Wakeup
MAX-M8C	•	•		•					•	•	•			•			+	+	■	C	o	o	o	•	•
MAX-M8Q	•	•		•				•		•	•			•			+	+	•	T	o	o	o	•	•
MAX-M8W	•	•		•				•			•			•			+	+	•	T	•	•	o	•	•

■ = higher backup current
C = Crystal / T = TCXO

+ = suitable for most applications / ++ = optimized for performance
o = Optional, or requires external components

Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1, SBAS L1 C/A: WAAS, EGNOS, MSAS		
Max nav. update rate	Single GNSS Concurrent GNSS	up to 18 Hz up to 10 Hz	
Position accuracy[1]	2.0 m CEP		
		MAX-M8Q/W	MAX-M8C
Acquisition	Cold starts: Aided starts: Reacquisition:	26 s 2 s 1.5 s	27 s 4 s 1.5 s
Sensitivity	Tracking & Nav: Cold starts: Hot starts:	–167 dBm –148 dBm –156 dBm	–164 dBm –147 dBm –156 dBm
Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days)[2] AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant		
Oscillator	TCXO (MAX-M8Q/M8W), Crystal (MAX-M8C)		
RTC crystal	Built-In (MAX-M8Q/M8W) or cost efficient solution with higher Backup current (MAX-M8C)		
LNA and outband filtering	On-chip		
Noise figure	3.5 dB		
Anti jamming	Active CW detection and removal		
Memory	Onboard ROM		
Supported antennas	Active and passive		
Odometer	Travelled distance		

[1] For default mode: GPS/SBAS/QZSS+GLONASS with TCXO
[2] Requires host integration

Electrical data

Supply voltage	1.65 V to 3.6 V (MAX-M8C) 2.7 V to 3.6 V (MAX-M8Q/M8W)
Power consumption[3]	25 mA @ 3.0 V (continuous) 5.5 mA @ 3.0 V Power Save Mode (1 Hz, GPS only)
Backup supply	1.4 to 3.6 V

[3] MAX-M8C

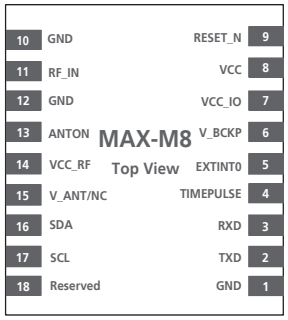
Interfaces

Serial interfaces	1 UART 1 DDC (I²C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

Package

18 pin LCC (Leadless Chip Carrier): 9.7 x 10.1 x 2.5 mm

Pinout



Environmental data, quality & reliability

Operating temp.	–40° C to 85° C
Storage temp.	–40° C to 85° C (MAX-M8Q/M8W) –40° C to 105° C (MAX-M8C)

RoHS compliant (lead-free)

Green (halogen-free): MAX-M8Q

Qualification according to ISO 16750

Manufactured and fully tested in ISO/TS 16949 certified production sites

Uses u-blox M8 chips qualified according to AEC-Q100

Support products

u-blox M8 evaluation kits:

Easy-to-use kits to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8N:	u-blox M8 GNSS evaluation kit, with TCXO, supports MAX-M8Q/M8W
EVK-M8C:	u-blox M8 GNSS evaluation kit, with crystal, supports MAX-M8C

Ordering information

MAX-M8C-0	u-blox M8 concurrent GNSS LCC module, crystal, ROM, 9.7x10.1 mm, 500 pcs/reel
MAX-M8Q-0	u-blox M8 concurrent GNSS LCC module, TCXO, ROM, green, 9.7x10.1 mm, 500 pcs/reel
MAX-M8W-0	u-blox M8 concurrent GNSS LCC module, TCXO, active antenna supply, ROM, 9.7x10.1 mm, 500 pcs/reel

Available as samples and tape on reel

Contact us

For contact information, see www.u-blox.com/contact-us.